

## PALEOBIOLOGY MEETING OF 19.05.1984 (BRUSSELS)

On 19th May 1984 a « Paleobiology Meeting » was organised in the KBIN-IRSCNB. The Vice-President of the Society, Professor F. DE VREE, opened the meeting, which had been organised and was chaired by A. V. DHONDT of the Paleontology Department of the KBIN-IRSCNB.

### Introduction

by

A. V. DHONDT

K.B.I.N. — Vautierstraat 29, B-1040 Brussels (Belgium)

A brief account was presented of the historical evolution of paleontological thinking and points of interest in paleontological research. From the end of the 19th century onwards, « The Origin of Species » and the resulting evolutionary thoughts basically influenced the way of working of some paleontologists. Interpretation of fossils as living animals was particularly important for Louis DOLLO (1857-1931) who worked in the « Muséum d'Histoire naturelle » in Brussels from 1882 till his death. He was probably the first conscious paleobiologist. His pupil, colleague, friend, the Austrian paleontologist Othenio ABEL (1875-1946), a frequent visitor to the Museum in Brussels, was the first to use the term « Paläobiologie ». He founded the journal « Palaeobiologica » which was published between 1928 and 1946. ABEL defined paleobiology as « das Gesamtgebiet der Erforschung des Lebens der Vorzeit auf biologische Grundlage ».

During the 1930's the environment in which the fossils had lived was the origin of a new direction in paleontological research : paleoecology. Its founder is the Russian paleontologist Roman T. HECKER (born in 1900). In the 1960's functional morphology (or its German alternative « Konstruktionsmorphologie ») gained importance in paleontological studies, partly as a reaction against numerical taxonomy and cladism (the Anglo-american interpretation of the theory of HENNIG). Since the 1970's the term Paleobiology is frequently used. The technological developments made it possible to widen paleontological research; now genetics, geobiochemistry and theoretical paleontology are also part of the subject. The theoretical foundations of this new direction have been stated in « Models in Paleobiology » edited by Tom SCHOPF (1939-1984) in 1972. He defined Paleobiology as paleontology without biostratigraphy (which he classified as belonging to historical geology). This view is being expanded in the journal « Paleobiology » which SCHOPF co-founded in 1975.

The purpose of the meeting organised in the KBIN-IRSCNB was to see how paleobiology is understood by Belgian paleontologists to-day, a century after the first publication of DOLLO !

### I. FORAMINIFERA.

#### Foraminiferal Bio- and Thanatocoenoses on Reef Flats, Lizard Island, Great Barrier Reef, Australia; Nature of Substrate

by

JAN BACCAERT

V.U.B.

The foraminiferal communities on three reef flats of the reef complex of Lizard Island have been studied by the author. The Lizard Archipelago is situated in the Northern Province of the Australian Great Barrier Reef and consists of three granitic islands (Lizard, Palfrey and South) linked by a reef complex. The reef flats of the « Windward » and « Southern » barriers belong to a reef « barrier » system linking respectively Lizard and South, and South and Palfrey Islands. Both reef flats show comparable physiographic zonation, but upon the southern flat only impoverished coral growth occurs. The third reef flat belongs to the fringing reef system along the east coast of Lizard Island and, again, shows the same zonation except on the backreef area, where the microatoll zone rises up towards a sandy-gravelly beach.

The thanatocoenoses of Foraminifera found in the sand pockets, drain channels and beach, faithfully reflect the biocoenoses of those living mainly upon and in a well-developed algal mat which covers large areas of the three reef flats, except the algal pavement (forereef) where algal growth is reduced to the crustose coralline lithothamnoid Rhodophyta. Only smaller empty tests and finer sediment particles are transported in a leeward direction.

Highest foraminiferal abundances are reached (bio- as well as thanatocoenoses) by Soritidae, Amphisteginidae, Calcarinidae and Elphidiidae. Particularly abundant species are *Marginopora vertebralis*, *Amphistegina lobifera*, *Calcarina spengleri*, *Baculogypsina sphaerulata* and *Elphidium crispum*.

The distribution of the foraminiferal communities is closely dependant on the distribution of the algal mat which is shown to form an ideal protecting habitat for larger as well as smaller Foraminifera. The algal composition of this mat is slightly variable but Chlorophyta (e.g. *Halimeda* spp.) and particularly smaller non-encrusting Rhodophyta (e.g. *Laurencia* spp., *Hypnea*, *Amphiroa* ...) dominate. The foraminiferal distribution is only secondarily influenced by the biological composition and species diversity of the algal mat; the physical properties (size, shape, flexibility and surface-texture of the thalli) play an important role in this respect.

Paleoecological applications of this algal-foraminiferal interdependence are possible but should be interpreted with caution.

### The Use of Theory in foraminiferal Systematics

by

STEFAN REVETS

V.U.B.

An analysis of foraminiferal taxonomy leads to the conclusion that the systematics of this taxon are deficient in consistency, adequacy and transparency. Having only morphological features at hand, the use of theoretical morphology is suggested as a new basis for systematics. Analyses starting from here should lead to insight in form and hence to delineation of morphospecies. Preliminaries to a case study of *Pyrgo*, DEFRANCE exemplify this approach.

## II. TRACE FOSSILS AND PREDATION

### Paleoenvironmental significance of bore-holes in Miocene ostracods of Belgium

by

KAREL WOUTERS

K.B.I.N. — Vautierstraat 29, B-1040 Brussels (Belgium)

Many valves of Belgian Miocene ostracods show bore-holes of naticid origin. The smallest hole observed measured 0.02 mm, the largest one 0.33 mm. The most common naticid species in the Miocene of Belgium is *Euspira catena* (DA COSTA, 1778), and it is assumed that most of the holes are drilled by this species. The predation pattern was analysed quantitatively. It was found that 2.0 to 13.7 % of the adult valves had bore-holes (mean value for the Belgian Miocene : 8.1 %). The bore-hole frequency is different from one locality to the next, and from one lithostratigraphic subdivision to another. The differences observed within a single section, however, are of the same magnitude. From the 81 species observed, only 36 have bore-holes, and what is more, 83.3 % of all bore-holes occur on the valves of six species : *Sarsicytheridea lienenklausi* (KUIPER, 1918), *S. cypridioides* (BRADY, 1878), *Pontocythere lithodomoides* (BOSQUET, 1852), *Cytheridea hoerstgenensis* BASSIOUNI, 1962, *Muellerina latimarginata* (SPEYER, 1863) and *Cytheridea* sp.

There seems to be a selective predation on these six species. This means that the percentage of valves with bore-holes is often larger than the actual percentage of occurrence of that species in one or more samples or even in a whole section. Five of the six